

Stage: **10.3
Design Stage**

Responsibility: Project Team

Description: In the Design Stage, all current system and project documentation, existing software and data bases, and the output of the Analysis Stage are used to design the modification to the system. *Exhibit 10.3-1* (provided at the end of this section) summarizes the input, process, and output for the Design Stage of software maintenance.

Input: Input to the Design Stage of software maintenance includes the following:

- Analysis Stage output, including:
 - Detailed analysis
 - Updated statement of requirements
 - Preliminary modification list (identification of affected elements)
 - Test strategy
 - Project Plan
- System and project documentation
- Existing source code, comments, and data bases

Process: The process steps for the Design Stage include the following:

- Identify selected software modules
- Modify software module documentation (e.g., data and control flow diagrams, schematics)
- Create test cases for the new design, including safety and security issues
- Identify/create regression tests
- Identify documentation (system/user) update requirements
- Update modification list
- Document any known constraints that influence the design, and any risks that have been identified. Where possible, actions, taken or recommended, that mitigate risk should also be documented.

Control:

The following control activities are performed during the Design Stage of a modification.

- Conduct structured walkthrough(s) of the design
- Verify that the new design/requirement is documented as an authorized change
- Verify the inclusion of new design material, including safety and security issues
- Verify that the appropriate test documentation has been updated
- Complete the traceability of the requirements to the design

Work Products:

The output of the Design Stage of software maintenance includes the following:

- Revised modification list
- Updated design baseline
- Updated test plans
- Revised detailed analysis
- Verified requirements
- Updated Project Plan
- Documented constraints and risks

Review Process:

Conduct structured walkthrough(s), In-Stage Assessment(s), and a Stage Exit.

Exhibit 10.3-1. Design Stage